land, amongst which it is only necessary to mention Blenheim and Castle Howard, commenced towards the beginning of the 18th century (*vide* vol. iii.). But our space does not admit any further extension of the present article, though much information will be found in previous pages, which will assist in elucidating the periods referred to.

TRINITY CHURCH, PADDINGTON.

Sir,—From the very able article which your paper of last week contained, urging the necessity of an architect being thoroughly acquainted with the more weighty and substantial portions of his art, in preference to the general, and in many cases injudicious, desire so prevalent in the profession, to crowd the exterior and interior of an edifice with ornament, I was induced to inspect the building therein mentioned, to ascertain, as correctly as possible, in what extent the evils referred to did exist, and endeavour, if existing, to ascertain their cause.

Trinity Church, Paddington, is a building I had many times inspected during its erection, and subsequent to its completion. And upon further inspection and inquiry (occasioned by your article of last week), I feel satisfied, no cause of apprehension or alarm was to be found, or mischief accruing from insufficiency of foundation; but other causes had been at work, occasioning the cracks (not slips), which are scarcely visible, but would have occurred, under like circumstances, with even Vitruvius himself, the which, when their real nature and consequent results are properly understood, very few will deny. The footings of this building are laid upon an artificial foundation of concrete, for which an excavation was made into the blue clay, of 6 feet in depth, under the ordinary walls, and 9 feet under the tower, into which the concrete was thrown, from a stage 16 feet in height, which the position of the raised roads adjoining readily furnished. The brickwork necessary to sustain the building was carried up with piers and arches to the height of 16 feet 6 in. from the top of such concrete, ere the ground line could be reached; this would of necessity incur a great expense, and hence an explanation of the 3,000*l.* report was to be so immediately expended in the foundations; but upon which I found a further sum of 1,000*l.* would not have been lavishly thrown away, had the proper authorities been sufficiently liberal in granting it.

Now, as to the real cause of the cracks, I was given to understand that the roads around this spot had been made to this great height of 16 feet by the Great Western Railway Company, in forming their terminus, long previous to the determination to erect a church upon this site. Such being the case, the walls would necessarily form a perpendicular side of a triangle in their relation with the roads, the sides of the embankments forming the hypothenuse. This triangle of earth, as it would appear in section, must unquestionably be filled up, to bring the ground around the church to a level with the roads. It then became a question how this should be accomplished; and after some delay, the parish authorities determined to undertake the task themselves (it forming no portion of the builder's contract), and therefore directed and appointed their own surveyor to superintend the work; thereby removing all responsibility from the architect (if any such could attach, seeing he had no jurisdiction, other than a warning) over the "modus operandi." However, the filling up was proceeded with, clay shot and punned in without any tabling of the sides, so necessary in all after sidings with embankments. The effect of this neglect would consequently be a subsidence towards the walls laterally; and would exhibit itself, upon the clay becoming charged with water, in the pressure exercising its greatest force against the longitudinal walls which present their sides to this breastwork of clay. A necessary deflexion would thereby be caused in such walls, and cracking must follow. This is precisely the result; not, as is supposed, a slip or settlement.—Yours, &c. Observer.

Mechanical Schemes.—It is said that no less than 460 plans for floating off the Great Britain have been received by the owners in Bristol.

RUINS OF PERUVIAN CITIES AND TUMULI NEAR LIMA.

These ruins are partly buried amongst moving sand, and are built of *loam*, a proof of the extreme dryness of the climate, where rains are of rare occurrence. The ruins of Pacachamac are the best preserved, and long rows of houses (several hundred) extend from the plain to the top of the hill; the uppermost seem to have been the best. The size of the houses is different, some are square, others oblong; and it is difficult to say whether one house had several rooms, or whether compartments, which appear to us as rooms, be distinct houses, as the walls are all of the same thickness, about 3 ft. Some of the houses, especially the smaller ones, have no openings (doors or windows) at all. Most of the walls are broken and decayed in their upper part, their height varying from 2 to 20 ft; in none, however, is there an opening except the door. The material is, without exception, moulded, unburnt clay. The bricks are 2 ft. long, 1 ft. broad, and ½ ft. thick, and laid in regular courses. Of a few of the houses, the walls are in a good state of preservation, and painted with red or yellow colour; of other ornaments, however, no trace is to be met with. The streets must have been wide enough, but they are mostly obstructed by drifted sand. The chief curiosity is the large building on the top of the hill, which rises on the upper part of the city, towards the sea. The hill is 2,300 ft. high, and the building was certainly one for a public use, as no other houses surround it. Three or four stories of terraces, supported by walls, 12 to 15 ft. high, rise one above the other; at times there is only a small platform behind them, at times a wide space between the earthwork and the hill. These terraces are not of a very regular structure, and the plateau overtopping them is from 200 to 400 ft. wide. The south side of the upper part of the terrace is well preserved, and consists of a row of niches 10 ft. high, and this is the only architectural adornment within the whole extent of these ruins. Some Frenchmen have of late furrowed this hill, consisting of argillaceous schist, for the finding of a *golden bell*, said to be buried there, but without success. It is thought that the large building was a Temple of the Sun.

On the north of the city is a square, which is surrounded on three sides by rows of houses. It contains graves on graves, and the scenery is perfectly adapted for the sepulchre of a nation the very name of which has faded away. A number of sculls, bones, and the tissue of the shrouds, lying about, shew that this place is occasionally searched for some hidden treasure.

The ruins of Cajamarquika are nearly of the same character, but the city contains several squares; those on the upper part are covered with high walls, and the loam bricks are more compact and larger. Curious are a number of holes dug in the ground, just large enough to admit the entering of one person; they lead to subterraneous caves, which seem to have been stores for the keeping of provisions. The graves here form two hills, at some distance from the old city. An elevation in the midst of the ruins, points to the dwelling of the priest or chief.—Everywhere in this neighbourhood, the hills, which extend from the Andes to the plains, contain ruins of similar cities, some even larger than those of Pacachamac and Cajamarquika, which, as samples of American architecture of a subordinate character to those hitherto discovered, are not wanting in Interest.

Water Raised by Waves through Valved Tubes.—A feasible and obvious application of Harvey's grand discovery of the use of valves in raising the blood through the veins, has just been suggested by a correspondent of the *Mechanics' Magazine*; namely, the raising of water from the sea, by the lash of the waves, through valved tubes, into reservoirs on a high level, for the acquisition, of course, of an unlimited supply of water power, to be turned to any requisite purpose. The inventor proposes to test the practicability of the principle on Southsea beach.

Leeds School of Design.—The school of design at Leeds has been formally opened. Seventy-two pupils entered during the first three days. Mr. Nursey is the master.

MAN... ON OF SAINT BRISTOL.

Mr. Sealey commenced by briefly recapitulating the leading istics of the several styles of Gothic architecture, and by enumerating the reigns in which they respectively prevailed. He then proceeded: In the absence of any certain records, the periods at which the several parts of Redcliffe Church were built must be judged of from the character of the architecture. It was quite uncertain how long the site of the present church had been occupied by an ecclesiastical structure. That there was a chapel near the spot before the erection of a church, dedicated to St. Mary, by De Burton, in the reign of Henry III., was unquestionable. It was mentioned as having stood on the south side of De Burton's church; and it was not destroyed till after the completion of the latter. It was dedicated to Saint Sprites (St. Esprit, or the Holy Ghost). And Wm. Wyrcester, a native of Bristol, who lived in the time of Henry VI., spoke of it as standing in his time; and called it an ancient chapel near Redcliffe Church. It was pretty certain, however, that a Norman church once stood on a portion of the area now occupied by the existing fabric; and at the west end, at the base of the tower, there still remains what appears to have been part of a Norman buttress. They found nothing distinctly recorded respecting the church, till the year 1294, when Simon de Burton, a citizen, who had been three times mayor of Bristol, was stated to have founded a church apparently on a grand scale; but of which the inner north porch, and probably the lower story of the tower, are almost the only parts remaining. Of the period of De Burton's death he could find no mention; but as one of the ancient Bristol chronicles said, that "Simon de Bourton, mayor, in 1294, had (two years before) begun to build Redcliffe Church, but he lived not to finish it, which afterwards William Canynge did," it seemed probable that he did not long survive the period at which he filled the office of mayor for the sixth time—1305. Comparing those dates (the commencement of the building in 1292, and the death of De Burton about 1306, or probably a few years later) with what he had said respecting the styles of architecture prevailing at different periods, they might expect to find any remaining portions of the church erected by De Burton, corresponding in their features with what he had described as early English Gothic; but late in the style, and verging towards the decorated. This was the case in the inner north porch and the lower portion of the tower. The former was, in its character, decidedly early English. It exhibited along each side an arcade, or connected series of arches, with shafts, foliaceous capital, and other sculpture, mouldings, and canopies, all clearly of that style; and it was roofed over with stone in the simplest form of groining—the ribs being only what were called cross-springers. In the lower portion of the tower they found some progress towards the decorated style; but still the flat buttresses, with shafts at their angles, and the row of niches above, belonged to the earlier period. In examining that tower, without other means of forming a conclusion than what the architecture itself afforded, he should be led to infer that it was founded about the commencement of the 13th century, and had progressed slowly, but uninterruptedly, occupying a period of not less than thirty years, and probably a longer time, in its construction. A tower so massive and so high, could not have been reared with greater rapidity at a period when mechanical appliances were rude; and the manner in which one portion of the work melts, as it were, into another, seems to mark that the transition of style kept pace with the progress of the building. They must not suppose that Burton's work was limited to the porch and tower. There could be little doubt that an early English nave was erected, for they found an early English buttress at the south-west angle of the present nave; and it was probable that the western window or windows were taken out to be replaced by one more in character with the nave, as rebuilt in the fifteenth century.

It was recorded in one of the old chronicles, called the Mayor's Calendar, under the date 1376, that William Canynge built the body of

* See p. 522, *ante*.

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